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PEQUOT TRAILS

PUBLISHED QUARTERLY IN THE SPRING, SUMMER, FALL AND WINTER
BY THE PEQUOT-SEPOS WILDLIFE SANCTUARY, MYSTIC, CONNECTICUT

Volume V Spring, 1953 Number 1

Alex Sprunt to Close Screen Tours

Alexander Sprunt, Jr.

Alexander Sprunt, Jr. of Charleston, South Carolina will present our fifth and final screen tour of the 1952-53 season. He will lecture and show his all-color motion picture "Wing Havens" in Buell Hall on Wednesday evening, May 6 at 8:00 p.m.

"Wing Havens" is the story of the great sanctuaries throughout the United States that have done so much towards the maintenance and protection of our native wildlife. You will see blue geese, snow geese and ducks in Louisiana; cranes, limpkins, and egrets in Florida; gulls, terns, and cormorants in Maine; songbirds in Connecticut and Long Island plus many other areas devoted to mammals and plant life.

Mr. Sprunt is one of our country's outstanding ornithologists. He has conducted the southern bird tours for the National Audubon Society for many years. He is a Fellow of the American Ornithologists Union. His greatest contribution to ornithological science is his work in the volume "South Carolina Birdlife", published in 1949.

Sanctuary Opens for Season On May 3

ANNUAL POSTER CONTEST

The Sanctuary's second annual conservation poster contest is now underway. Complete details for the contest have been mailed to all schools in the area. The contest is open to all school students, grades 5 through 12. There are two divisions in the contest - one for elementary grades and one for high schools.

The contest is sponsored for the purpose of furthering the interest in the out-of-doors and conservation among the young people of our communities. A U. S. Savings Bond and several cash prizes will be awarded the winners. The contest will close on May 15. The awards will be given the winners on June 7 at a special ceremony and program to be held at the Sanctuary's trailside museum.

Last year's contest was a big success with 157 entries. It is hoped that more schools and more students will submit entries this year. Extra copies of the contest rules may be secured by writing to the Sanctuary.

Membership Drive Opens

A concerted effort to increase the Sanctuary's membership has just been launched by Mrs. Henry Whitney and Mrs. H. P. Gongaware, Co-chairmen of the Sanctuary's Membership Committee. They have set as their goal a total of 650 members by the end of this fiscal year, June 30, 1953. It is hoped that all members will cooperate with the committee by using the enclosed membership application blank to secure one new member. Every effort will be made to make this year's annual meeting a special occasion for all new members. All new memberships received now will be extended to expire June 30, 1954.

Museum and Trails Have a New Look

The Sanctuary's trailside museum, nature trails, forestry area, and other demonstration areas will open officially for the 1953 season on Sunday afternoon, May 3. A special program, new exhibits, and refreshments will make it a delightful afternoon for all those attending. The hours will be from two until five. All members are urged to attend and bring their friends and neighbors.

Visitors will find the trails with a completely new look. All directional signs are new and freshly painted. The signs and labels around the Nature Trail are new and tell a more complete story of nature's wonders than ever before. Special observation areas have been cleared along the trails. All trails have been widened and cleared.

The museum being housed temporarily in the old barn will have more interesting and numerous exhibits than in previous years. For example, some new electrical games requiring actual manipulation will be added as an interesting way of teaching identification, habitat groupings, etc. It is our endeavor to make this an interesting educational center serving as a stepping stone to a greater and more understanding interest in the out-of-doors.

The woodlot management area will be given its second grooming and will continue to show the advantages gained by some thoughtful management of our second-growth hardwoods. Our new pond, new shrub plantings, nesting boxes, etc. will all be available for observation and to make it an enjoyable and profitable day for all those attending.

Folders describing this summer's sessions at the Audubon Camp of Maine and the Audubon Camp of Connecticut are available from the Sanctuary.

JOYS OF A WINDOW FEEDER

Most of the winter feeding at the Sanctuary is done in two places - in the small yard back of the house and just outside the picture window at the museum. Our most interesting feeder is the glass one fastened to the kitchen window. To have a large number and variety of birds feeding within 3 or 4 feet of where you are working does take some of the stigma out of washing dishes and other household chores. There is rarely a minute during daylight hours that there is not some activity in the feeder. The chickadees keep up a regular traffic pattern as they carry away the sunflower seeds. If one "goofs off" and turns the wrong way, there is apt to be a mid-air collision. Purple finches have been here all winter and are daily visitors to our window - a dozen or 15 in the feeder vying for sunflower seeds. White throats and juncos take their turns. Fox sparrows, tree sparrows, and wintering song sparrows are also steady customers. The downy and the hairy woodpeckers will come to the window for suet.

It's always interesting to watch and compare the varying species that will feed together. Last evening (March 22) for example, there was a dickcissel, a downy woodpecker, a white-breasted nuthatch, a white throat, a purple finch and a pine siskin feeding at the same time. Meanwhile, the chickadees kept darting in and out.

The scene in the window is constantly changing bringing new thrills daily. Following is a list of birds observed within our window feeder.

Chickadee, white-throated sparrow, downy woodpecker, tree sparrow, redpoll, cowbird, purple finch, song sparrow, white-crowned sparrow, catbird, chipping sparrow, English sparrow, blue jay, slate-colored junco, mourning dove, evening grosbeak, carolina wren, fox sparrow, starling, baltimore oriole, towhee, dickcissel, pine siskin, and white-winged crossbill.

Will Sponsor Screen Tours Next Season

The Sanctuary will sponsor the Audubon Screen Tours again during the 1953-54 season. We look upon these Tours as one of the highlights of our winter's educational program.

The cost of the Tours has gone up considerably. In order to keep the Tours on a sound financial basis for the coming season it will take the concerted effort of everyone interested in them. We plan now to maintain the same price scale for tickets and concentrate our efforts on increasing the attendance. We believe that with increased promotion and more partici-

(See SCREEN TOURS, P. 3)

The new Audubon Bird House Kits are available in the Sanctuary's Trading Post.

Identification Course Scheduled for Norwich

The Sanctuary's elementary course in bird identification will be given in Norwich this year. The course will be conducted by our Curator and will be given on four successive Tuesday evenings, April 7, 14, 21, and 28 at the Norwich Free Academy. Sessions will start at 7:30 and end at 9:00. A field trip will be included and held at the convenience of those taking the course. The course is open to all adults whether they are Sanctuary members or not. Scout troops in the area may send one or two older boys who may be working on their bird Study Merit Badge.

The course will present a plan or a method of identification. Colored slides and actual bird song recordings will be used. Members interested in taking the course should fill out and mail the attached application blank immediately. Registrations will also be accepted at the first session. A two-dollar registration fee will be charged to defray minor expenses.

Registration Form
Bird Identification Course

Please enroll me in the bird identification course to be held at the Norwich Free Academy on April 7, 14, 21, and 28. My $2.00 registration fee is ...enclosed

...will be paid at first session

NAME..

ADDRESS..

Bird Notes

The first DICKCISSEL to be observed at the Sanctuary appeared with a flock of ENGLISH SPARROWS in October. It was a regular customer at the feeding station for about a week - long enough to be banded - and then disappeared. A northeast storm the second week in January brought in the second DICKCISSEL (no band) and a YELLOW-BREASTED CHAT. The CHAT stayed around for about a month feeding mostly on suet. The DICKCISSEL is still here and feeds daily in the window feeder by the kitchen window. The Christmas Census conducted by Robert Logan for the National Audubon Society included 3 SNOW GEESE, a flock of PINE WARBLERS, and a flock of SNOW BUNTINGS. On Jan. 27, a cold, windy day, a large flock of ROBINS and a flock of CEDAR WAXWINGS spent the day feeding on the haws of the multiflora rose. On Feb. 11, a flock of PINE SISKINS arrived at the window feeder and proceeded to take possession thereof. When they wanted to feed, they would clear the feeder of all other birds - except for the WHITE-WINGED CROSSBILL that arrived about one week later. He held his ground firmly. The CROSSBILL was last observed on March 8. The male RED-WINGS held true to schedule and arrived on Washington's Birthday. Some of the more interesting species observed on a field trip that day by Mr. Logan included 137 CANADA GEESE, 3 TREE SWALLOWS. 4 HORNED LARKS, 40 PINE SISKINS, REDPOLLS, 4 KILLDEER. 85 BONAPARTE GULLS. and 9 OLD SQUAWS. A card from Mrs. Irving Fisher of New Haven on Feb. 12 reported a DICKCISSEL and a flock of WHITE-WINGED CROSSBILLS - both firsts for her list. Maynard Peterson of New London reported TREE SWALLOWS in early February, also a flock of RED CROSSBILLS in early March. The PHOEBE arrived at the Sanctuary on March 19.

Casual observations would indicate that there was a heavy flight of WHITE THROATS last fall - 85 being banded at the Sanctuary in one day. PINE SISKINS were abundant at most feeding stations this winter. CROSSBILLS were much more numerous than in any recent winter. EVENING GROSSBEAKS were not reported very frequently. One lonely female visited the window feeder in late February. FOX SPARROWS were reported from more stations than usual.

Get a new Sanctuary member! Use the enclosed application blank.

Our Favorite Sport

America's favorite sport reached a new high during the year ending June 30, 1952 with the record sale of 17,127,896 anglers' licenses, according to a report released by the U. S. Fish and Wildlife Service. This is an increase of more than a million licenses over the previous year. The gross revenue derived by the 48 States from these license sales amounted to $33,609,539.

Connecticut issued 89,375 resident licenses and 4,643 for non-residents. Rhode Island issued 23,140 for residents and 450 for non-residents.

Sport fishing received an important boost two years ago with the passage of the Dingell-Johnson Act, also known as the Federal Aid to Fisheries. D-J funds are obtained from the ten per cent excise tax on fishing tackle and then are realloted to states according to their size and the number of fishing licenses they sell. The D-J Act specifies that no state is entitled to less than one per cent of the total funds nor to more than 5 per cent, and eight per cent is automatically used by the Fish and Wildlife Service for the administration of federal aid projects which must be approved by the F & W Service. To qualify, a state must match each three dollars received from federal funds with one dollar from State funds. Last year Connecticut received $25,085 which is being spent as follows:. Acquisition of land and water in the Salmon River watershed; repair of the damage to a state-owned lake; research project being conducted at the University of Connecticut to develop a simple field test for inorganic nutrients in water.

SCREEN TOURS

(Cont. from P. 2)

pation by interested members, we can fill Buell Hall for each performance. One of the interesting observations during the past seasons has been that our audiences are composed largely of the same people each time. This is certainly an indication that once you attend one or two of these Tours, you are quite certain to become a steady patron.

The sponsorship of five such outstanding programs is a major undertaking for an organization the size of ours. However, we believe them to be of such value that we plan to continue them so long as it is financially possible.

NEW TREES... The State of Virginia attaches a packet of 12 tree seeds with simple instructions for planting, to every hunting and fishing license issued.

Calendar of Events

APRIL

7 Bird Identification Course, Norwich

13 Quarterly Meeting, Board of Trustees (time and place to be announced)

14 Bird Identification Course, Norwich

21 Bird Identification Course, Norwich

26 Field Trip, Napatree Point, Leave Beach Club at Watch Hill at 8:00 a.m. Return about 11:00 a.m.

28 Bird Identification Course, Norwich

MAY

3 Open House at Sanctuary - 2 p.m. to 5 p.m.

6 Audubon Screen Tour, Buell Hall, 8:00 p.m.

10 Field Trip (land birds) at the Sanctuary 7:00 a.m. Doughnuts and coffee for the survivors.

JUNE

7 Poster awards at the Sanctuary 3:00 p.m.

14 Field Trip (wild flowers) under leadership of Russell Waldo - at the Sanctuary, 2:30 p.m.

The Component Parts Of 500 Grams of Connecticut Soil

by Belton A. Copp

(Editorial Note - The following paper was given to me by Mr. Copp with the thought that I might want to condense it, or use part of it, for our quarterly bulletin. This I agreed to do, but after reading it thoroughly, I decided that the paper was of such value and interest that it should not be cut in any manner. - T.P. McElroy)

I propose to take a trowel full of a soil commonly found in eastern Connecticut and analyze its amazing ingredients. For the purposes of easier computation, I am arbitrarily assuming that the trowel in the case I am about to analyze is holding exactly 500 grams of dirt by dry weight, or a little more than a pound. But before I go into the ingredients of this soil, it may be in order to generalize a bit about Connecticut soils, and especially about the soils common to our part of the state.

New London County lies in that part of the state which geologists refer to as the "eastern highlands". The eastern highlands stretch east from a line which roughly bisects the state, and marks the eastern boundary of the central lowland region, a narrow valley running north and south from New Haven to the Massachusetts line being about 5 miles in width at Long Island Sound and about 20 miles wide at its juncture at the Massachusetts boundary, and including Hartford. In the eastern highland region, most of the soil has developed in the comparative present, for geochronometric tests with carbon 14 indicate that our first trees developed on the raw glacial till perhaps only as recently as eight thousand years ago; so our Connecticut soil is a very young soil. It is also called a podzol. A podzol is a soil which has developed under a forest cover; and the climax vegetation in the eastern part of Connecticut is a deciduous forest. The texture of our podzol soils, however, depends not so much on the nature of the vegetation which developed the soil, as the nature of the glacial till from which it was developed; and this glacial till in eastern Connecticut is mostly a sandy loam, or a variation of a sandy loam, such as a stoney sandy loam, a gravelly sandy loam, a coarse sandy loam, a medium, fine, or very fine sandy loam, depending upon the percentage of fine materials which the till contained. Moreover, from the same type of parent material or glacial till, several different types of soil of the same texture can develop, even under the seain vegetative cover. One of the principle reasons for the difference in soil types thus produced is the different moisture content of the different types - in other words, whether the particular type drains readily or drains very poorly. The particular soil type which is most common in this area is called a Gloucester soil, named after the locality where this type was first identified. It is a well-drained sandy loam brown podzol; thus it is a pound of this particular soil type, developed under a deciduous forest cover from a loose and friable glacial till that is composed, for the most part, of finely ground granite and gneiss that I will particularly analyze.

This soil, if found in its virgin condition, would consist of five separate more or less, distinct layers of horizons. I say "more or less distinct" because to a person who was not a specialist, only perhaps three of the layers would be easily recognizable and apparent. A layman could probably readily discover the thin Ao horizon which is a one to three inch layer of decaying leaves and twigs lying on top of what we would call the soil proper. Beneath this layer of mulch there is normally a thin two inch horizon distinguished because of its white color. This is the A1 horizon from which the podzol takes its name, "pod-

(See CONNECTICUT SOIL, P. 4)

CONNECTICUT SOIL

(Cont. from P. 3)

zol" being a Polish word meaning "ash", and this layer in a true podzol is often ash colored. Beneath this ash-colored layer is the yellower B horizon, and it is the different horizons in the B layer which most laymen would find hard to separate apart. Suffice it to say for our purposes that the A and B horizons together compose the solum, or zone of soil building, and the C horizon below the B is the parent material from which the soil above it was built. Cultivation of this Gloucester type solid destroys the identity of these top two horizons anyway, and mixes them up to a depth of about six to seven inches, depending on how deep the soil is plowed; and it is this top six or seven inches of soil which is known as the plowsole from which we will take our sample.

First, taking a pound or so of this surface soil as it lays on our trowel, and examining it, we notice that if in proper till it is slightly moist and crumbly and easily crushed between the fingers. This compressability and moisture is due, of course, to the water and air spaces in the soil, and in a soil in good condition the percentage by volume of water and air is almost exactly half, generally varying from 49% to 52%. Of this 50% by volume of water and air, approximately 20% is air and 30% water. Now the remaining 50% of the soil by volume is composed of minerals and organic matter; and surprisingly enough, even in a good soil of this type, the average organic content seldom exceeds 5% by volume of the total soil sample. This not only holds true for the Gloucester soil which we are particularly analyzing, but also for perhaps 90% of the other soils of the United States. In other words, minerals make up 95% of the dry weight of most soils found in this country.

Now these minerals are the materials from which the plants built the soil in the first place, and it is the size of the particles of minerals which determine the texture of the soil. You will remember that we referred to most of soil types in these parts of Connecticut as sandy loams. Now a typical sandy loam consists of 65% sand, 25% silt, and 10% clay. A soil containing 85% sand, 10% silt and 5% clay is called, in soil terminology, a loamy sand; whereas a soil containing 45% sand, 40% silt and 15% clay is called a loam. As can be seen, a silt loam has more silt than sand, a clay loam more clay than silt, but more silt than sand, for any soil containing more clay than silt or sand is called a clay.

Now I had always been confused myself about the word "loam". I thought that it referred to "humus" or any organic matter in the soil, and I always supposed that sand, silt and clay were different qualitatively as well as quantitatively. Actually this is not so. Clay is any very fine mineral particle in the soil less than two thousandths of a millimeter in size (two thousandths of a millimeter being equivalent to 78 millionths of an inch); silt is any mineral particle over two thousandths of a millimeter, and up to 5 hundredths of a millimeter, or one-five-hundredths of an inch. Sand is any particle over 5 hundredths of a millimeter, up to very fine pebbles. Of course, sands are graded out as very fine, medium, and coarse sands, and the coarse sands being less than 2 millimeters in diameter. All of these fine particles are of different sizes and shapes, and even the clay particles are now thought to be extremely small crystals, particles, incidently, smaller than the bacteria in the soil, and not visible except under very powerful magnification.

The chemical constituency of these various mineral particles, whether of clay, silt, or sand is very complex. They are weathered products of the parent rock or glacial till; and of course, glacial till is rock which has been crushed and weathered by the terrific interaction of ice, water and weather on the stone. However, the fact which seems to surprise most people, and which certainly surprised me, is that, whether the particles are so fine as to be called clay, or whether they are so fine as to be called silt, or whether they are so fine as to be called sand, they all have approximately the same chemical constituency, and are composed of the same minerals, with much the same molecular structure as the rock from which the particles whethered. In the case of our Gloucester soil type in eastern Connecticut, these minerals are mostly weathered products of granite and gneiss.

But perhaps more interesting than these inert components of the soil are the vast millions of living organisms which even our small sample of soil contains. In our pound of dirt laying on our trowel there are literally millions and billions of these organisms.

Among the largest of these, assuming that we have dug up no part of a small ground-burrowing mammal or any large quantities of grubs and insects is the common earthworm. It has been estimated that between 250,000 to 1,000,000 individuals are found in an acre-furrow slice. Now assuming that our trowelful of earth by dry weight weighs 500 grams, or a little over a pound, a very, very rough average would leave us with an average of 1/10 of a gram of earthworm for each trowel full of dirt. Then in addition we might expect to find in this same pound of dirt a maximum of 25,000 nematodes, or threadworms, and as many as 500,000,000 protozoa, of maybe 40 to 250 different species. Translating this latter figure to an acre-furrow slice, the number of protozoa in our pound of dirt would amount to about 1/50 of a gram. Also in our sample would be some undetermined number of rotifers, a microanimal about which very little is known. The earthworms, threadworms, grubs, protozoa and rotifers are the common animal organisms of the soil, and in our pound, there were millions of some species, as we have seen. But the vegetable life organisms have yet to be estimated, and their number and diversity are region.

Of this vegetable life, first of all we have plant roots, living and decayed, and perhaps in our 500-grams sample we might expect to have almost two grams by weight of these plant roots. Then in order, we might expect to find the following microplant organisms: approximately 500,000 green and blue algal organisms, whose total weight would amount to about 1/10 of a gram; approximately 2,500,000 individuals of mold genera, including such molds as pencillium, which would collectively weigh about 1/5 of a gram in our pound of dirt. It is estimated that there are almost 1,000 to 1,200 pounds of molds to an acre of land. To me that is an absolutely staggering figure; but even the molds pale into insignificance with the number of individuals of a micro-plant organism known as actimyectes found in our small sample of soil. It has been estimated that over 1,000,000 individuals of this organism, weighing perhaps a tenth of a gram for each pound of soil, are found in soils conducive to its growth.

Last, but not least, are the bacteria of the soil -- perhaps the most important micro-organism in it; and of these in the pound of soil which lays on your trowel are an estimated one trillion, 250 billion living specimens of several different species. The total weight of this astronomical number is only approximately 1/10 of a gram. But in an acre of land, it is estimated that there is about 500 pounds of live bacterial tissue.

Looking back down, then, at this dirt as we grub and dig in our gardens this spring, we may well pause and reflect on the vast world which we are so unconsciously manipulating. To me the wonder of the teeming life in a little pound of dirt is fully as mysterious as the universe, once the infinity of life in the former is fully appreciated.